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When science goes feral

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1. A cat out of its bag

In the new, digitized 'Society 2.0', popular ideas are often perceived as transmissible viruses or genes ('memes'), and for an increasing number of people information is a quarry that can be hunted anywhere: from a bed, a train, a mountain-top. Basic scientific principles and complex ideas now live on digital highways and can escape the academic community who discovered or cultured them. What becomes of them and how this affects science awaits discovery. There is, however, already a trail of breadcrumbs in historical examples and the immutability of human nature.

It is common knowledge that before digital media, scientific ideas could appeal to the Zeitgeist and could be used, for better or worse, in a way that was a corruption of its original use or meaning. From Darwin's 'survival of the fittest' to eugenics, scientific ideas have bounded away into socio-political territories. Since the advent of the internet more than a decade ago, search engines, digital libraries and discussion forums have been assimilated into society so it is now possible to follow the trail of a scientific idea, a 'cat out of the bag' whose escape and civilian wanderlust bestrides Societies 0.0 (pre-internet), 1.0 (the advent of the internet), and 2.0 (the integration of social-networking and interactive digital platforms).

To this end, ecology can be used as a case-study that may help environmental science to look upon its place in the information revolution in a new light. Here it is viewed through the lens of landscape architecture, which as both an academic and applied discipline has a membrane-like role, positioned between science and the public realm. The necessity to sit between these two worlds and yet work intimately with both gives it an interesting overview of, and experience with, the challenging feedback from 'escaped ecology'.

2. Ecology the escapologist

As a young branch of biology, ecology is providing inspiration for many environmental science disciplines at a time of increasing stress on the globe. But ecologists are aware that earlier on it "escaped from the confines of academia and took on very different meanings", resulting in the public having an understanding of ecology as a "life philosophy, a source of guidance or a link to morality" [1].

The proverbial cat was out of the bag. As an example of science with a positive public face, the newly escaped ecology had a broad and highly relevant remit, some easily understood principles, and a tangible link to the everyday world. Like a competent cat it moved effortlessly into a series of new, wild territories. Its largest colonization, the connection of ecology with the environmental movement, began subtly with ethics via Aldo Leopold in 1949 and with explosive politics and action after the publication of Rachel Carson's 'Silent Spring' in 1962. This association strengthened across the transition from Society 0.0 to Society 1.0 with continued and increasing natural devastation such as large-scale rainforest destruction and chlorofluorcarbons (CFCs) creating a hole in the ozone layer. The growing awareness of the need to protect the earth and work in harmony with its processes as a survival mechanism for the human race secured the public role of escaped ecology, which spread its kittens in niches that stood independent of science – in other words, ecology went feral.

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3. A landscape overview of territories

Landscape architecture is a field affected both by scientific ecology and its feral derivatives since it uses environmental and sustainability science as well as responding delicately to social conditions. Everything from geomorphology and soil science to environmental psychology and politics is incorporated in the environmental designer's education and research or field-work remit. In this way, landscape practice functions as an outward conduit for new knowledge, and a receptor for broader societal needs or trends. The feedback received from feral ecology takes differing forms across academe, professions, clients, and community.

In the case of feral ecology in academic and professional landscape architecture its feedback began with the 1969 publication 'Design with Nature', by Ian L. McHarg. Since then it has been constantly argued that ecological principles should be applied in design. A lot of theory and discussion has resulted, some responding to constant requests by conservation ecologists or involving direct project work with ecologists. Most ecological design theory, however, involves developing key design principles from broad ecological understanding – these are personal judgements made by individual academic or practicing landscape architects regarding what they themselves consider applicable or useful, filtered by their personal views and professional requirements. The influence of ecology in academia is thus already shared between pure science and feral feedback.

Recent landscape architecture ecological design discourse has argued that integrating ecologically derived ethics into the teaching and practice of landscape architecture would secure the future of the profession and deal with competing value systems, by achieving the understanding that 'the place is the real client' [2]. This is a valid point that would increase designers' influence on environmental design and policy, helping them become 'activists' [3,4] for positive change that is so far lacking. In this way feral ecology has spurred serious and useful debate regarding education and interventions in the field.

Despite the positive influences, i.e., the evolution of landscape ecological design (using sustainable, holistic practice and materials to contribute to a more ecologically stable environment) its practice is still minimal, indicating a lack of willingness or ability to seize this new addition to the design process. Additionally, as in many areas of life, the term 'eco' can be used to 'greenwash' conventional landscape design [5] or be used too loosely [6] – which can be seen as feral ecology prowling within the design process in a threatening way.

Other feral ecology feedback comes from the perception of clients either in research or in the field where ecology is primarily seen as a good thing if it saves money or generates positive PR – capitalizing on the feral ecology concept that all ecology is good. Worry over poor distribution of a certain type of leech, or the complex soil chemistry of a bog, are not part of corporate feral ecology's face.

Meanwhile, community feral ecology is breeding healthily, fed from the grass roots. It appears in forms that possibly bring the most challenging feedback for sustainability and development, landscape and planning, while benefitting the overall aims of conservation ecology. For closer study, permaculture is taken as an example of a feral ecology offspring that has shadowed its siblings across the path of Society 0.0 to 2.0.

4. A feral ecology offspring: permaculture

A type of domestic agro-ecosystem design called permaculture has begun to spring-up in the design of open spaces, urban and rural alike. It has ethics, ecologically derived design principles, and systems-thinking approaches to spatial arrangement that draw on ecological food-webs and nutrient cycling concepts. Its popularity from the 1970s onwards rode the growing communication revolution. Now its terms and techniques spread virally through you-tube videos, support and information exchange bulletin boards, blogs, national societies and local networks; its businesses and courses proliferate. In the ecological Society 2.0, peer-to-peer learning is back in fashion. This movement has built an ecological culture with such strong beliefs and identity that it has been considered cult-like and thus rarely manages to come in from the fringe.

However, permaculture as a feral ecology can bring benefits to conservation and urban ecology through conscious provision of habitat for native flora and fauna, and high plant diversity. Its principles agree with well-known ecological principles, but they are anthropophilic; they do theoretically make room for leeches and bogs, but the drive is to attain a practical midway point between anthropocentric and eco-centric. It shows how an ethical approach to land and a simplified or idealized ecological understanding can fuel the enabling of space in a way that makes it socially, environmentally and productively relevant.

In short, this challenges both academic and professional landscape architecture. Permaculture's full design methodology borrows elements from landscape architecture to inform its predesign and analysis phases. Projects using the technique exhibit what Corner [7] was waiting for the emergence of, i.e., a 'culturally animate ecology' – a form of non-scientific understanding and use of ecology by individuals or communities for their own benefit in their urban environments. Back in 1993, permaculture was already seen as having the potential to help guide an earth ethic within landscape architecture [8] since the conventional approaches to ecology in landscape architecture have failed [9].

The positivistic and optimistic nature of the permaculture method inspires bottom-up activity since it makes environmental change tangible and an ecological viewpoint comprehensible. It approaches ecology through benefits at individual level e.g., food and materials, with collective benefits to common goods as a by-product – e.g., biodiversity, healthy environment, and 'clear' conscience. Additionally, when its principles are applied to food production and to trade, 'the two activities become symbiotic' [10]. This can be seen in the activities of the Transition Towns movement, founded as a way to use the ecologically inspired design principles of permaculture to make whole communities sustainable. It reflects growing ecologically stimulated understanding of environmental crises among communities and a public wish to take practical action instead of waiting passively for governmental acts or corporate technological solutions. A true Society 2.0?

These forays by feral ecology via landscape architecture provide lessons for landscape and planning, the development fields, and social sciences, since feral ecology often achieves change and public education where science, politics, and environmental designers have yet to tread. Permaculture practitioners, for example, have made it their business to be 'do-gooders', to go where land repair or productive systems are needed, such as urban agriculture, degraded or marginal farmland and official disaster relief or aid situations including Kosovo, Cuba, and Haiti [11]. The UNHCR are now looking at permaculture as the inspiration for sustainable design of refugee camps – for long-term land repair and productivity, short-term food production and site water management, amongst other considerations [12].

These are not totally unusual fields for landscape architects, although those travelling charitably abroad to design and teach design methods are few and far between. However, the more important question is, would ecologists achieve this? Would they have considered it their business? Would they have been invited to help in these capacities? If ecology had not gone feral it would not be colonizing new fields, opening-up new opportunities for

pure and applied ecology. Will ecologists be aware of these developments and take up the baton to work in this win-win style, as proposed by Rosensweig [13]?

5. Learning from the wilderness?

I consider that the story of feral ecology can teach us something about the future of science in Society 2.0. As described above, we can expect ideas from science to 'go feral' and come back to challenge disciplines, to colonize new areas, open up potential new benefits from applied science, create multidisciplinary views or exchanges, and be used to express a public Zeitgeist and empower communities to enact practical change.

All this is likely to happen more often, and faster, thanks to the new tools and technologies of Web 2.0 (the precedent and inspiration for the concept of Society 2.0). These were created for digital media users to move from being passive consumers to "active contributors, helping customize media and technology for their own purposes, as well as those of their communities" [14]. With the knowledge that their ideas move into society, scientists can explore ways to harness this already tangible potential to ensure awareness, actively stimulate possible useful feral innovation and keep track of any positive or negative consequences for research and education.

Feral ecology already plays a part in Society 2.0; its effect on societal beliefs creates a swathe of people who become interested in their environment and feel that, as a positive thing, ecology is something that their children should be actively exposed to. It can be argued that feral ecology leads people back to the door of the pure science of ecology and further learning. From environmental organizations' children's clubs and community wildlife gardens to green activism, it draws-in the next generation of clearly focused and consequently emotionally committed life-sciences students. Furthermore, an awareness of biological values, ethical values, and a wish to participate means that those who cannot or do not choose an academic path become supporters for conservation action. True to the remit of interactivity and ease of communication of Society 2.0, they also become potential volunteer armies in the cause of pure ecological science, with museums and NGOs able to mobilize the public to help conduct enormous countrywide flora and fauna survey programmes.

In short, the example of feral ecology and specifically the case of permaculture illustrates how a popular understanding of science can be used in positive ways despite being an extreme simplification, professionally challenging and creating blurred boundaries. It gives people outside academia a sense of ownership and increased understanding of their surroundings – necessary for the healthy survival of humanity and an intact global ecological system. This is something valuable; now it is up to science in general and universities in particular, to creatively capitalize on this future.

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